

New Venture Evolution and Managerial Capabilities

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This study examines factors influencing changes in the top management of start-up firms. Whereas a significant amount of research has examined top management transitions in established firms, we know much less about the factors influencing the evolution of top management capabilities in a new firm. Our research examines these issues in a sample of new ventures founded from 1983 through 1995, examining each firm for seven years after its founding to evaluate the conditions that influence a firm's changes in top management. Results indicate that top management team changes occur in cases of very low or very high firm growth, but are mitigated by a functionally diverse top management team. Power and control of inside and outside constituencies also affect changes in top management, with venture capital ownership and board representation increasing change in top management, and managerial ownership decreasing changes.

Key words: entrepreneurship; top management teams; governance and control; organizational evolution and change

A critical factor in the success of a new venture is the ability of its initial leadership to continue to meet new challenges as the business evolves. New ventures are often begun by an entrepreneur who has a very specific marketable product or idea, who then brings together other founders and funding to create the new business. What conditions motivate changes in the leadership of such a firm? Research focused on managerial changes in start-up firms is framed by approaches from an entrepreneurial perspective on the one hand, and by studies of large firm executive succession on the other. The entrepreneurial perspective tends to emphasize the life cycle aspect of venture development and the possibility that founding entrepreneurs become less adept at managing the firm's evolution beyond their initial focus and across an expanding operation (Boeker and Karichalil 2002, Jayaraman et al. 2000). Research on larger firms has focused on the ability of firms to adapt to environmental change, the consequences of promoting insiders rather than outsiders to the position of chief executive, and the effects of entrenchment and power dynamics on the actual execution of leadership change (Hambrick et al., forthcoming).

Despite arguments that start-up firms need to augment their managerial capabilities as they grow, there have been few theoretically grounded, empirically rigorous studies of whether and how new ventures add these capabilities (Rubenson and Gupta 1996). Willard et al. (1992) argue against the importance of changing CEOs as new ventures evolve by showing no mean performance differences in a sample of 110 founder-run firms, compared with 45 "professional CEO"-run firms. Much of the interest in chief executive change in new ventures

stems from anecdotal studies of firms that have faltered soon after founding because the founding team was unable to manage the established firm (Auletta 1998). In many cases, these new ventures were subsequently revived when a new executive with more managerial experience was brought in (Flamholtz 1990). To better understand the critical role that change in top management can have in a new venture, we bring together life cycle perspectives on new venture evolution and leadership change, and the large firm succession dimensions of power and governance.

This study furthers this line of research by examining two key research questions: (1) How do firm growth, strategic change, and characteristics of the existing top management team influence the extent of top management team change in new ventures? (2) How are these changes affected by the power dynamics and oversight of the team, represented by different levels of ownership and board independence? Our empirical setting is the semiconductor industry from 1983 through 1995, following each firm for seven years after it is founded. Our paper begins by hypothesizing factors in top management team change, then proceeds to a discussion of the ways in which ownership and board oversight might effect the implementation of those changes. We conclude with a discussion of the models and results of our empirical analysis.

Theoretical Development

When an organization begins, founders assume a charismatic role in which the person and his or her position are tightly coupled (Weber 1968, Giddens 1979). As the new venture grows and develops, the job and attention

of founders shifts from personally directing and controlling many of the activities of the organization to providing direction to others who are responsible for actual operations (Kimberly 1980). Although it is possible for founders to adapt their style and become successful at running a larger business, these founders often have neither the interest nor the skills necessary to do so (Jayaraman et al. 2000). Stevenson and Jarillo (1990) argue that very different sets of skills are needed to effectively manage the entrepreneurial challenges of a start-up versus the administrative challenges of an established firm. As Jayaraman et al. note (2000, p. 1,216): “A founder’s ongoing involvement in general management activities may be decreasingly valuable or even detrimental to a company’s success as the firm grows.”

Many popular press accounts and much of the conventional wisdom surrounding new firm start-ups also argues that new ventures quickly outgrow their founding leaders and require change in the form of professional managers with more managerial- than entrepreneurial-oriented capabilities to successfully lead the firm as it develops (Willard et al. 1992). The recently emerging world of Internet and e-commerce offers several examples of experienced professional managers being brought in to help manage start-ups after founding. Well-publicized examples include James Barksdale (formerly of FedEx) at Netscape, Timothy Koogle (formerly of Motorola) at Yahoo!, and Meg Whitman (formerly of FTD) at eBay. In these examples, professional managers were brought in to help run the start-up because of their broader set of managerial capabilities and experiences (Auletta 1998).

Life Cycle Effects on Firm Development

Life cycle models and the life cycle metaphor has been used to describe human development (Levinson 1987), new venture development (Burgelman and Sayles 1986), industry evolution (Hannan and Carroll 1992), and even the rise and fall of nations (Kennedy 1987). In organizational analyses, theorists have characterized organizations as evolving through life cycle stages as they grow, accompanied by very significant changes in the managerial capabilities needed by the firm (Van de Ven and Poole 1995). In most life cycle models, theorists posit that organizations confront certain generic problems as they age and grow. Managers and members respond by modifying the organization’s management, systems, structure, and authority (Pugh et al. 1968). In this process, life cycle models call attention to the common set of challenges faced by the firm as it matures, and attempt to develop broad heuristics that can be applied to firms at specific stages of their development (Aldrich 1999).

The underlying dimensions of life cycle reasoning are the age and growth of the firm. Managerial demands are argued to change as a new venture grows, with organizational tasks and external interfaces typically increasing and becoming more complex (Covin and Slevin

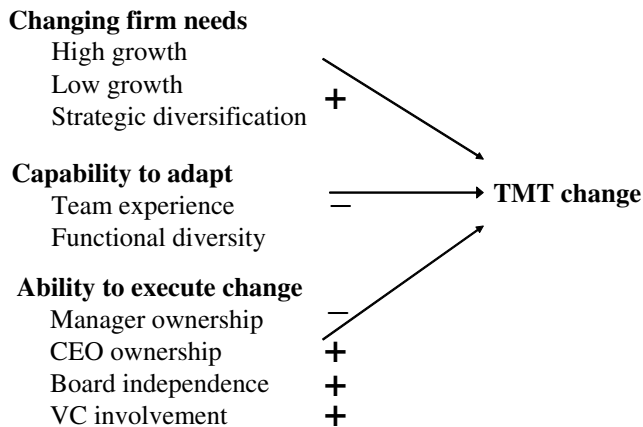
1997). One of the earliest proposed life cycle models, Greiner’s (1972) model of organization development, argues that firms proceed through distinguishable phases; at each phase, major changes in the organization need to take place for the firm to be successful in the succeeding period. Greiner (1972) describes the first stage of firm development as “growth through creativity” (p. 41), occurring soon after the firm is founded. During this phase, the nascent organization is driven by the pioneering product and market insight of its founders. This evolutionary stage ends in a “crisis of leadership” (p. 41), in which firm founders realize that they do not possess the necessary skills to manage the firm to its next stage. Among a very broad set of managerial responsibilities, we refer to typical skills demanded of top managers including leadership, delegation, oversight and guidance, creative response to changing opportunities and threats, and interfacing with complex sets of external stakeholders.

A key argument of life cycle theorists studying the earliest founding stages is that the original founding group may not possess the proper skills to manage a larger and more established firm, and may not be able to modify their personal management style to match the evolving firm’s needs (Gilmore 1988). One of the significant changes that can arise is the need for extensive delegation and a relinquishment of control and direct involvement in many aspects of the firm, often a very different leadership approach than what initially led to entrepreneurial success (Churchill and Lewis 1983). Under these changing conditions, the top management team may need to change to effectively match the capabilities of the team with the changing needs of the firm.

Given the difficulties of managing these transitions, life cycle theorists have argued that new ventures may need to bring in professional managers who possess capabilities better suited to running an established firm (Adizes 1989, Hanks 1990). In one of the few empirical examinations of this basic notion, Hambrick and Crozier (1985) find that successful start-ups are more proactive in adding managers with more experience, whereas new ventures that are less successful at growing past the founding stage are likely to leave the set of founding managers essentially unchanged. Rubenson and Gupta (1996) outline important factors in this process, explaining key relationships that influence changes in the founder as the firm transitions through development stages. They suggest a model examining three sets of variables: those relating to the changing needs of the organization, those relating to the ability and desire of the founder to adapt to those changing needs, and those related to the ability of the founders to prevent their own succession.

Building on that framework, in this study we examine firm growth and strategic change as drivers of the

Figure 1 Top Management Team Change in New Ventures



Note. VC = venture capitalists; TMT = top management team.

need for changes in the capabilities of top management. The necessity of changing top management may be tempered, however, by the capabilities of the current top management team to adapt to the firm's evolving leadership demands. Following an investigation of these life cycle effects after founding, we turn to an analysis of the power of incumbent top managers to prevent team change, examining the role of ownership and board membership in influencing power dynamics in the upper echelon of the organization (Finkelstein and Hambrick 1996). Figure 1 illustrates our framework and the manner in which these variables influence change in the top management of the new venture.

Firm Growth. Firms that are growing at a more rapid rate may need to more proactively adjust their managerial capabilities, making the need for new top management talent especially acute in faster-growing organizations. As noted by Argote (1999), firm growth may lead to information overload for the individual manager. Processes of delegation, planning and balancing resources needs, and organizing specialized subsystems are aspects of the administrative challenge brought on by firm growth (Lawrence and Lorsch 1967, Chandler 1962). Higher rates of growth also challenge the ability of any individual manager to adapt, leading to an increased need to change the team rather than to rely on adaptation (Rubenson and Gupta 1992). Thus, we expect fast-growing new ventures to institute more changes in their top management teams (Flamholtz 1990).

Although fast growth can create the need for different top managers, a lack of start-up growth may also serve as an indication that new top managers with different skills are needed, in this case to help turn the new venture around. Slow growth may serve as a signal to stakeholders and other firm constituencies that the current management of the new venture is ineffective and that new capabilities may be needed. Past work on top management change has argued that the inability of current

top management team to meet growth expectations is the primary motivation for bringing in new leadership (Finkelstein and Hambrick 1996), and Boeker and Karichalil (2002) demonstrate an increased rate of founder departure under conditions of low growth.

Both fast growth and slow growth are therefore expected to lead to changes in top management. Fast-growing new ventures need different top management talent to successfully exploit the ventures' growth, whereas slow-growing new ventures may need new managers to turn around a potential failure.

HYPOTHESIS 1. *There is a U-shaped relationship between firm growth and change in top management of a new venture. New ventures that are growing more rapidly or more slowly will make more changes to their top management.*

Strategic Diversification. Diversification, broadening the set of products and markets the firm competes in, also impacts the ability of current management to successfully manage the new venture. Start-up firms typically begin with a business plan targeting a specific product or market that parallels the founders' expertise (Cooper and Gimeno 1992, Eisenhardt and Schoonhoven 1990). As the new venture expands, it must decide whether and how rapidly to diversify into new products or services. To the extent that the firm remains strategically focused as it grows, the expertise provided by the founders may be sufficient to continue to compete in the original set of products (Rubenson 1989).

Diversification by the firm into new products, however, often requires different product or market expertise—expertise that may not be available or readily recognizable to the founding managers of the firm (Hambrick and Crozier 1985). As the firm diversifies and modifies its strategy, the skill set of the founding managers may be less well matched to these new markets. If the firm decides to diversify into new product areas, it is likely to require different capabilities from top management (Hofer and Charan 1984).

HYPOTHESIS 2. *New ventures with greater strategic diversification will make more changes to their top management.*

Top Management Experience. Although the nature of managing a new venture changes as it grows and pursues new strategies, some top management teams may be better able than others to adapt their management practices. Founders and teams with more overall industry experience should have greater relevant business, managerial, and industry familiarity, and may be better able to cope with the changing needs of the firm as it expands (Hofer and Charan 1984). Experience has been shown to be a critical factor in studies of the effects of leaders and their organizations. Roberts and Berry (1985, p. 323), for example, find that "familiarity with the technology

and market being addressed is the critical variable that explains much of the success or failure in new business development.”

Founders with less experience in the industry may not have the same capabilities and knowledge to draw on as the firm evolves (Eisenhardt and Schoonhoven 1996). As a result, they may be unable to spot trends or generate a range of possible alternatives from which to make the best possible business decision. Rubenson (1989) demonstrates that managers who have more business and industry experience are likely to better understand how to manage a new venture as it grows and be better positioned to grow revenue and market share. In addition, Eisenhardt and Schoonhoven (1990) point out that top managers with a great deal of industry experience are likely to have more influence in the firm than less experienced managers. Top management teams of new ventures with greater overall levels of industry experience are likely to be better able to accommodate the needs of the firm brought on by their firm’s growth and strategic change, thus reducing the need to make changes.

HYPOTHESIS 3. *New ventures having top management teams with greater industry experience will make fewer changes to their top management.*

Functional Diversity of Top Management. The diversity of the team’s experience is as important as the absolute level of experience of the top management team. Teams comprising individuals representing only a small number of functions may not have the requisite skills to manage a new venture as it evolves. The diversity in functional representation captured by the entire team represents the expertise and capabilities that can be contributed to the new firm as it develops. Start-up ventures comprising teams representing a narrow set of functions may be limited in the knowledge base that they can access (Cohen and Levinthal 1990, Aldrich 1999).

Research examining diversity of experience has found that as top management teams’ functional experience broadens, they avoid overcommitment to the status quo, have a wider range of practices to call on, and tend to be more open to new ways of operating (Geletkanycz and Black 2001). Bunderson and Sutcliffe (2002) show these benefits reach even to the individual level, where intrapersonal diversity of experience has similar positive effects that at times can outweigh the effects attributed to dominant functional experience. In addition to the broader skill set of these top managers, Williams et al. (1995) find that top management teams with greater functional diversity implement organizational changes more quickly. Adaptation to the changing needs of the venture becomes a more realistic option for management teams with more diverse experience. As a result, whereas growth and strategic change may increase the need to adjust the capabilities of the top management team in a new venture, the diversity of experience in the team

may meet these needs without requiring changes in the members of the team.

HYPOTHESIS 4. *New ventures having top management teams with greater functional diversity will make fewer changes to their top management.*

These initial hypotheses provide the context for us to answer the first question of this study: In what ways do firm growth and strategic change affect change in managerial capabilities? Growth and strategic change are predicted to motivate changes in the top management team of the new venture, but these changes may be mitigated through the experience and variety of experience of current top management. Our second question involves the manner in which power and control influence change in top management. Whereas life cycle theories suggest the need to change top management as the firm develops, the balance of power and competing interests among top managers, owners, and the board is likely to play a significant role in the patterns of change we actually observe.

New Venture Ownership

One of the key issues in this balance of power is ownership of the firm. Decisions about top management change are strongly influenced by who controls the firm (Finkelstein and Hambrick 1996), and ownership has an important influence on the amount of power individuals and groups have in the organization (Goodstein and Boeker 1991). This is particularly true in new ventures, where owners often play an active role in managing and advising the firm, and are typically more directly involved in the operation of the firm than are the owners in more established organizations. Ownership of new ventures is also fairly concentrated, leading owners to exert tighter and more proactive control over decisions around top management staffing (Flamholtz 1990).

Prior work on the role of inside ownership has examined how ownership can act to protect top management’s power base and position (Berle and Means 1932, Mizuchi 1983). Management ownership may permit managers to act opportunistically, safeguarding their position from possible encroachment by new managers who might usurp their power or position (Williamson 1985). If insiders have a stronger ownership position in the new venture, the importance of protecting their position may manifest itself in less change in top management (Aldrich 1999). Owner-managers may feel that they continue to be competent at running the firm and may be less willing to share power with new top managers brought in after founding. Owner-managers may also identify more strongly with the firm they founded and believe that they know what is best for the new venture because they started it and have a greater ownership interest in it.

Conversely, outsider owners may have fewer reservations about changing top managers, due to reduced

personal or relational ties to the existing management group (Useem 1984). Increases in outside ownership also increase the incentives for outside owners to actively monitor and influence the composition of top management, because they have a larger stake in the outcome. Particularly when outside ownership is concentrated within powerful groups, outside owners may act as a credible check on the power and influence of top managers (Boeker 1992).

HYPOTHESIS 5. New ventures with greater ownership by insiders will make fewer changes to top management.

We also wish to disentangle the specific effect of chief executive ownership from the effect of inside ownership generally. Past research has argued that strong chief executives are more proactive in making changes to and influencing the top management team (Finkelstein and Hambrick 1996).

Ownership by the chief executive is likely to increase the power of the chief executive to influence management team changes beyond their preeminent role as head of the firm. Although life cycle theory would normally suggest the value of changing the founder or CEO as the firm develops, power derived through ownership may enhance his or her ability to adjust the team's capabilities to meet the changing needs of the firm. As a result, chief executives with greater ownership (likely resulting in greater influence) are predicted to initiate more changes in top management.

HYPOTHESIS 6. New ventures with greater ownership by the chief executive will make more changes to the top management team.

A reduction in top management ownership represents an increasing stake for outside owners. Outside owners who are actively involved in the operation and development of new ventures are venture capitalists. Venture capitalists not only provide financial backing for start-up firms, but also often help oversee the operation of the firm, provide management and legal advice, and aid the founders in defining new markets and strategies as the new venture evolves (Gompers and Lerner 2001).

One of the main roles for venture capitalists is monitoring the managerial capabilities of the firm. As Hellman and Puri (2002) point out, it is often venture capitalists that are instrumental in initiating changes in the top management of the new venture. Kaplan and Stromberg (2001) find that the majority of venture capitalists expect to make changes to top management as they invest in new ventures. Changing top management may also represent a signal by venture capitalists to their limited partners that they are actively involved in the ventures; it may also signal to potential new investors (particularly the public markets) that the management team is more developed and more capable. Venture capitalists typically have a significant ownership stake in the

new venture and are proactive about advocating changes in managerial talent as the situation warrants (Sapienza and Gupta 1994).

HYPOTHESIS 7. New ventures with greater ownership by venture capitalists will make more changes to their top management.

Boards of Directors

Oversight, in addition to ownership, is likely to affect the implementation of change in ventures. A venture's board of directors plays the primary oversight role and is extensively involved with policy decisions made by the management team, including executive compensation and team make up (Lynall et al. 2003). In agency terms, managers are agents of the owners (principals) and as such do not necessarily share in the residual profits of the enterprise. Accordingly, their interests in the firm's goals and resources may diverge substantially from those of the owners. Boards of directors play a central role in addressing these agency problems (Jensen and Meckling 1976).

Past work on firm governance has noted a key distinction between inside and outside board members. Whereas outside board members may fill their monitoring role well, inside board members (board members who are also employees) are likely to exert more influence over decision making in the firm, and are likely to be less independent than outside directors (Rediker and Seth 1995, Boyd 1994). Mizruchi (1983) argues that inside directors, as full-time managers, may be less interested in sharing control with potential new managers, particularly those from outside the firm. Because inside board members are also full-time managers, their objectivity may be limited and diverging interests may undermine the ability of the board to exert control (Westphal and Zajac 1995). Boards composed of a higher proportion of insiders may be more reluctant to welcome changes in top management, be concerned that such changes might disrupt their own positions in the firm, and limit their range of responsibilities and activities, if not remove them entirely. In such cases, we would expect that boards with more insiders would generally be less likely to demand changes in top management.

Conversely, ventures with a greater proportion of outside directors may be more proactive at critically monitoring the performance of the firm and its managers, and be more willing to adjust the management team's capabilities by changing top managers. Agency theorists have long argued that independent boards—those composed of outsiders—more effectively monitor management behavior and firm policy (Fama 1980). Substantial research has argued that outsider-dominated boards help keep management's use of power in check (Monks and Minow 2001), are more likely to replace chief executives following periods of poor performance (Weisbach

1988), and more effectively enact poison pill policies in favor of shareholder wealth rather than in favor of protecting management (Brickley et al. 1994). The generally accepted perspective is that outside directors are better able to exhibit independence and objectivity.

In this study, we explore this possibility in relation to managerial change in a new venture. In newer ventures, however, the overall independence level of the board is likely lower than in larger firms. Outside board members of new ventures are more likely to consist of close friends and acquaintances of the founding entrepreneur (entrepreneurs). Outsiders in these new ventures may act more as insiders than their counterparts in larger firms, creating a conservative test of our hypothesis:

HYPOTHESIS 8. *New ventures with boards composed of a greater proportion of outside directors will make more changes in top management.*

As with our arguments for ownership, we predict venture capitalists on the board of directors to be more closely involved with the operation of the firm and more proactive in encouraging adjustments to the management team.

HYPOTHESIS 9. *New ventures with boards composed of a greater proportion of venture capitalists will make more changes to top management.*

Addressing our second research question regarding the execution of top management change, these hypotheses argue that because power and oversight is internal to the firm, the execution of change will occur less frequently. When power and oversight reside outside the management team, particularly when they are concentrated (as is the case with venture capital owners and board members), we expect change to significantly increase.

Methods

These hypotheses were tested on a sample of 86 semiconductor firms founded between 1983 and 1995 in the area of the United States known as Silicon Valley. Information on the firms was collected from public data sources and three market research firms. In cases where we could not obtain the information from publicly available sources, we interviewed top executives at firms with missing information.

The data used in the analysis included annual observations on all the variables over the first seven years after the new venture was founded. This seven-year period was chosen to allow for the full effect of the relationships we hypothesize, reaching well past estimates of the start-up phase. Industry analysts and venture capitalists in this industry tend to agree that the start-up period lasts up to approximately five years, after which the firm is no longer considered a start-up. Our data consist of annual panel data for the seven years after the firm was founded

(founding was measured as date of incorporation), helping to ensure coverage of the relevant window for new venture management changes. Because we believe our independent variables will have an influence on subsequent decisions to change or add to the top management team, all independent variables are lagged one year.

Measures: Dependent Variable

Top Management Change. We define the top management team as the chief executive and all top managers reporting to the chief executive. We operationalize this as the sum of the number of additions to the top management team and the number of departures from the top management team.

Measures: Independent Variables

Firm Growth. Firm growth was measured as growth in sales. Sales growth was measured as the proportionate increase in revenue over the year prior to which top management change or addition was measured. To separate out any effects that were due to the size of the firm or the overall growth in the industry, controls for firm size (in terms of sales) and industry growth were also included in the model.

Strategic Diversification. Strategic diversification was operationalized as diversification into new product areas. Using data from the market research firms, we identified 20 comprehensive product groups within the semiconductor industry.¹ Strategic diversification is measured as any increase in the number of product groups in which the firm competed in the prior year.

Top Management Industry Experience. Top management experience was an organization-level variable that measured the average amount of time that current top managers had worked in the semiconductor industry.

Top Management Functional Diversity. Top managers were found to come from four types of primary functional experience: (1) research and development, (2) manufacturing and operations, (3) marketing and sales, and (4) finance, accounting, legal, and administrative. Top management functional diversity was measured using an entropy measure, where P_i is the percentage of top managers in the i th functional area across the four functional areas.

$$\text{Functional diversity} = \sum P_i \ln(1/P_i).$$

The entropy measure for top management functional diversity assesses whether top managers represent a wide variety of functions. Higher scores indicate a more diverse set of functional experiences for the top management team.

Inside Ownership. Top management ownership measured the proportion of total firm ownership held by individuals who were employees of the firm.

Chief Executive Ownership. Chief executive ownership measured the proportion of firm ownership held by the chief executive of the firm.

Venture Capital Ownership. Venture capital ownership measured the proportion of firm ownership held by venture capitalists who were funding the organization.

Outside Directors. Outside directors measured the proportion of board members who were not employed by the firm.

Venture Capital Directors. Venture capital directors measured the proportion of board members who were members of venture capital firms.

Controls

Five controls were added to the effects hypothesized above.

Firm Size. Size was measured as firm sales (using In Sales).

Firm Age. Based on earlier studies of top management turnover in established firms, top management changes are generally expected to decline over time. Firm age was measured as the number of years since incorporation.

Top Management Team Size. Top management size was measured as a count of the members of the top management team (direct reports to the chief executive). Top management team size was included to control for any effect on additions or departures as the result of the size of the top management team.

Industry Growth. During periods of slower industry growth, firms may see less need for change in the types of top managers needed to successfully run the firm. In contrast, firms competing in periods of rapid industry growth are likely to update and adjust the capabilities of the top management team more frequently (Finkelstein and Hambrick 1996). Industry growth was measured as sales growth of the overall market over the prior year.

Public Ownership. Organizations were differentiated on the basis of whether they were publicly or privately held. No specific predictions were made regarding the extent of top management additions in public versus private firms. Public or private ownership was coded as one if the firm was publicly held and zero if the firm was privately held.

Modeling Procedure

The dependent variables of top management change consists of counts with a lower boundary of zero, making ordered probit estimation preferable for modeling these discrete events (Greene 1997). In all models, we introduced fixed effects for firm and time, as well as controls for heteroscedastic disturbances.

Results

Table 1 shows means, standard deviations, and correlations among the variables. Models exploring the effects of the control variables and the independent variables are shown in Table 2. The first model in Table 2 examines the effects of the control variables by themselves before adding the hypothesized independent variables.

Table 1 Correlation Matrix*

Variables	Mean	Std. dev.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Top mgmt. change	0.19	0.14														
2. Firm growth	0.68	0.44	0.10													
3. Strategic diversification	3.27	1.86	0.14	0.15												
4. Mgmt. industry experience	9.42	4.27	-0.15	0.13	0.08											
5. Mgmt. functional diversity	0.71	0.24	-0.17	0.12	0.21	0.09										
6. Top mgmt. ownership	0.60	0.20	-0.09	0.05	-0.13	0.20	-0.04									
7. Chief exec. ownership	0.12	0.11	-0.04	-0.10	-0.14	0.09	-0.07	0.13								
8. VC ownership	0.34	0.20	0.18	0.14	0.19	-0.12	0.03	-0.34	-0.16							
9. Outside directors	0.57	0.12	0.11	-0.05	0.04	-0.17	-0.13	-0.20	-0.18	0.29						
10. VC directors	0.28	0.21	0.16	0.12	0.19	-0.15	-0.16	-0.16	-0.14	0.37	0.22					
11. TMT size	5.26	1.75	-0.08	-0.11	0.08	0.06	0.09	-0.12	-0.05	0.09	0.13	0.13				
12. Firm size	16.72	10.12	0.16	-0.10	0.23	0.11	0.18	0.08	-0.20	0.23	0.18	0.19	0.12			
13. Firm age (quarters)	18.4	9.22	0.20	-0.18	0.18	0.21	0.23	-0.12	-0.15	0.19	0.24	0.17	0.09	0.40		
14. Industry growth	0.63	0.38	0.03	0.27	0.15	0.08	0.05	0.07	-0.03	0.08	0.06	0.06	0.02	0.11	-0.02	
15. Public ownership	0.59	0.42	0.13	-0.20	-0.04	0.11	0.25	0.05	-0.21	-0.17	0.13	-0.12	0.07	0.27	0.18	-0.07

*All correlations above $r = 0.12$ are significant at $p < 0.05$.

Table 2 Determinants of Top Management Team Change

	Top management change	Top management change
Controls		
Top management team size	0.072 (0.072)	0.068 (0.070)
Firm size	0.077 [†] (0.050)	0.068 [†] (0.045)
Firm age	0.162 (0.181)	0.156 (0.178)
Industry growth	0.015 (0.098)	0.013 (0.010)
Public ownership	0.546* (0.241)	0.512* (0.226)
Constant	0.685** (0.291)	0.643** (0.282)
Independent variables		
Firm growth		-1.601** (0.526)
Firm growth ²		0.386* (0.165)
Strategic diversification		0.306 (0.202)
Top management industry experience		-0.258 [†] (0.135)
Top management diversity		-0.365* (0.138)
Inside ownership		-0.113* (0.047)
Chief executive ownership		0.175* (0.080)
Venture capital ownership		0.137** (0.039)
Outside directors		0.259 (0.189)
Venture capital directors		0.676** (0.140)
Log likelihood	-258.42	-315.15

* $p < 0.05$, ** $p < 0.01$, [†] $p < 0.10$, using a two-tailed test. $N = 516$ firm-years.

Firm size (measured as number of employees) was marginally significant (at the 0.10 level), offering some indication that the demands of managing larger numbers of employees increases change in top management. Public ownership also was significant. Public firms may face greater outside scrutiny (Useem 1984) and fewer internal political constraints, leading to more top management change. The effects of the hypothesized variables were then added to the second model of Table 2.

Effects of Firm Growth. Hypothesis 1 predicted that both fast-growing and slow-growing new ventures would be likely to demonstrate change in top management talent, resulting in a U-shaped relationship between growth and top management change. The predicted U-shaped relationship was confirmed as indicated in Table 2, where the direct effect of growth is negative and the quadratic growth (growth²) term is positive.²

Strategic Diversification. Hypothesis 2 predicted that strategic diversification would increase change in the top management team. Firms changing their strategy by diversifying into new product areas may need to change their top management team by acquiring managers with a wider variety of skills and capabilities. This hypothesis was not supported.

Industry Experience and Functional Diversity. We also investigated whether differences in top management industry experience and breadth of functional experience affected team change. Hypothesis 3 argued that top management teams with greater industry experience have a more advanced set of relevant, valuable skills, reducing the need to change managers as the firm evolves from founding; it was marginally supported ($p < 0.10$) in the model. Hypothesis 4 predicted that more functional diversity would also create less need for the new venture to change managers as it developed and was significantly supported in the model. Both experience and functionally diverse top management appear to limit the need to bring on new managers as the new venture develops.

Effects of Ownership and Boards of Directors. Hypotheses 5 through 7 argued that ownership by specific groups would influence top management change in the new venture. Hypothesis 5 examined the effect of inside owners in reducing top management change, arguing that they may be interested in maintaining the status quo within the top management team. Hypothesis 6 posited that ownership by the chief executive will lead to more top management changes, and Hypothesis 7 argued that ownership by active external constituencies such as venture capitalists would increase top management change. Results in Table 2 demonstrate support for each of these hypotheses: Greater inside ownership led to less top management change, whereas chief executive and venture capital ownership led to more change.

Hypotheses 8 and 9 examined the structure of the board of directors and its effect on top management change in new ventures. Hypothesis 8 argued that new ventures with greater outside director participation would make more changes in their top management because insider directors may be more interested in protecting their positions and the stability of the team. The results in Table 2, however, indicated no support for this hypothesis. Hypothesis 9 looked at the effect of venture capitalists on the board, which may be a more direct measure of focused board oversight than differences between inside and outside directors; the hypothesis was supported. Increasing venture capital representation on the board led to significantly more change in top management.

Given the importance of the life cycle of the firm and firm growth on changes in top management, we also evaluated the interactive effects of the independent variables and firm growth. Because we have no strong theoretical

reasons to make specific a priori predictions, this analysis is exploratory. Results of the analysis (not shown) indicated that the interactive effects of growth with top management team diversity and management ownership were significant. In these cases, the effect of team diversity and management ownership combine with growth to further reduce top management team change beyond the direct effects of those variables.

Discussion

Past work in entrepreneurship has noted the critical difference between starting and managing a successful firm. This study expands on the life cycle arguments that have motivated past studies by including effects of top management characteristics, governance, and ownership. By examining changes in the top management of the new venture we obtain a more comprehensive picture of the factors driving changes in managerial talent. Our study shows what factors motivate new ventures to change their top management, and how the ownership and oversight of the venture can enhance or interfere with that process.

Life cycle perspectives have argued that the complexity of the organization and the required mix of critical skills change as new ventures grow and develop. The results of our study demonstrate support for this perspective, but with the added insight that both low growth and very high growth can lead to pressures for top management change. Our results demonstrate clear differences that exist between new ventures and established firms. In both established firms and new ventures, low growth is seen as leading to top management change. In established firms, growth and success is associated with a lack of change in top management. However, in successful new ventures it is precisely because the new venture has been successful, and is growing so rapidly, that different managerial capabilities are often needed to handle the increased complexity of managerial tasks.

Change in top management occurs through both the addition and departure of executives. Managerial additions are an important theoretical and empirical subset, because many of the notions surrounding the evolution of new ventures and the life cycle of the firm are focused on the types of managerial capabilities that need to be added to the new venture. Aldrich (1999), for example, argues that the expansion of new ventures into other product areas is often accompanied by the introduction of new managers to the focal organization with the capabilities to help the new venture to compete more successfully in the new market. In the case of strategic diversity, although we did not find that direct effects of diversification had a significant effect on top management change, supplementary analysis (not shown) indicates that strategic diversity did have a significant effect on additions to the firm. Further research is needed to understand whether the use of additions (rather than departures) is

affected by product line extensions differently than by product line deletions.

The functional diversity of the top management team appears to mitigate the need for top management change. New ventures with more functionally diverse top management made fewer changes in top managers, supporting our argument that some firms may be able to accommodate the changing needs of their ventures more effectively than others, based on their broader skill set. Whereas some firm characteristics lead to a need for new management talent (firm growth and strategic change), they can be counterbalanced by the ability of top management to meet these needs through their breadth of knowledge, as represented by their functional diversity (Rubenson and Gupta 1996).

In addition to the factors that motivate and mitigate management change, we explore the intervening role of power and control in the actual execution of change. Top managers who are also owners appear less than enthusiastic in making changes to their team; our findings demonstrate that firms with a higher proportion of top management ownership experience less top management change. In addition to managerial ownership, ownership by the chief executive is significantly related to increasing the extent of change in other top managers. Through this process, the chief executive may be able to maintain his or her position if the top management team is adjusted to the changing needs of the venture as it develops through its life cycle.

Other ownership effects were also significant. As ownership by venture capitalists increases, top management change increases. VC representation on the board of directors shows additional effects on top management change, representing formal influence over the company in addition to the implied rights of influence represented by ownership. Additionally, in supplementary analysis of additions and departures as components of team change, venture capital power led to a significant emphasis on departures rather than on additions, indicating a strong bias for replacing members of the team rather than adding new members.

We also examined outside directors as an influence in firm control and increased management change, but did not find significant effects of the hypothesized relationship. Where outside board members in large firms are argued to be more independent of the influence of the chief executive, in new ventures it may be that even directors fitting the definition of *outsiders* are more closely allied with the venture's management through friendships or social ties. The specific subgroup of outside directors that are composed of venture capitalists, rather than the broad notion of outsider, appears to be a better proxy for independence in the case of new ventures.

The combination of concepts from life cycle theory and power in executive succession provide a compelling picture of how new ventures come to make changes

in their management. The development of the venture presents changing leadership needs and a need for different managerial capabilities. These capabilities may already exist in teams with greater diversity of experience, but the power and influence represented by ownership and boards of directors directly influence the extent to which top management changes actually occur.

Limitations and Future Research

This research offers a broad, macro-level view of some of the antecedents of change in top management team capabilities. Future research should be directed at a more micro-level, and even at a case-based investigation of the specific types of skills and competencies that new managers bring to new ventures. A better understanding of the sorts of managerial profiles that may be more appropriate as a new venture evolves may offer practical insights into venture capitalists, boards, and top managers of new ventures. A practical area for future research is an examination of performance implications of changes in the top management of the new venture. What types or combinations of managerial competencies appear to offer performance advantages to new ventures?

Although our research is explicitly interested in examining the transition from an entrepreneurial firm to a professionally managed firm, a potential limitation of our study is the implication that all entrepreneurial firms necessarily need a new group of professional managers to add skills and capabilities to the founding team. Clearly, inadequate managerial skill and leadership can have a pervasive influence on the firm, but it is unclear whether a wholesale shift in the top management of the new venture will somehow lead to performance improvements. Few observers would argue that Microsoft, Walmart, Hewlett-Packard, FedEx, Southwest Airlines, and other firms would have been better off replacing their founders. Our intents in this paper are to suggest that the team's overall capability does need to meet the changing needs of the venture, and to outline the indicators and moderators of those changing needs. Leaders of new ventures may benefit from proactively dealing with these issues.

Future research in entrepreneurship and firm founding must continue to investigate the evolution of managerial capabilities during the early development of the new venture. The results of this study provide some of the first empirical support for the role of growth, strategy, power, and governance on changes in the top management capabilities of the new venture. Studying the question of how change in a founding team unfolds can provide important insights into the role of firm control and individual differences in limiting or encouraging changes in managerial capabilities.

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Endnotes

¹Other studies in the semiconductor industry (Eisenhardt and Schoonhoven 1990) have used the same categories.

²We examined the inflection point of the curvilinear effect and confirm that it fell within the range of the independent variables in each case.

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